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(FILE 'HOME' ENTERED AT 18:56:31 ON 19 OCT 2001)

FILE 'BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH' ENTERED AT 18:57:06 ON 19 OCT 2001

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L1          2893 S MICROBIAL (W) PRODUCTION
L2           190 S L1 AND (AMINO (W) ACIDS)
L3            28 S L2 AND CORYNEBACTERIUM
L4            13 L3 AND LYSINE
L5             0 L3 AND ((EXPORT) (W) (GENE OR CARRIER))
L6             0 S L3 AND EXPORT (W) GENE
L7           166 S EXPORT (W) GENE
L8             0 S L3 AND L7
L9             0 S L3 (P) L7
L10            0 S L2 AND L7
L11            0 S L2 AND EXPORT (W) GENE
L12           61 S L7 AND MICROB?
L13            1 S L12 AND CORYNEBACTERIUM
L14           26 DUP REM L3 (2 DUPLICATES REMOVED)
L15           13 DUP REM L4 (0 DUPLICATES REMOVED)

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STN
Search Strategy

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition	Errors
1	BRS	L1	0	microbial adj production adj of adj amino adj acid	USPAT; US-PGPUB; EPO; JPO; DERWENT	2001/10/19 18:38			0
2	BRS	L7	702	microbial adj production	USPAT; US-PGPUB; EPO; JPO; DERWENT	2001/10/19 18:38			0
3	BRS	L13	314	L7 and (amino adj acid)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2001/10/19 18:39			0
4	BRS	L19	47	L13 and Corynebacterium	USPAT; US-PGPUB; EPO; JPO; DERWENT	2001/10/19 18:40			0

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09/105,117
EAST
Search History

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition	Errors
5	BRS	L25	0	L19 and (manufacturing adj L-lysine)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2001/10/19 18:42			0
6	BRS	L37	1	L19 and ((export)adj(gene or carrier))	USPAT; US-PGPUB; EPO; JPO; DERWENT	2001/10/19 18:47			0
7	BRS	L31	11	L19 and lysine	USPAT; US-PGPUB; EPO; JPO; DERWENT	2001/10/19 18:48			0

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09/105117

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NEWS	1		Web Page URLs for STN Seminar Schedule - N. America
NEWS	2	Dec 17	The CA Lexicon available in the CAPLUS and CA files
NEWS	3	Feb 06	Engineering Information Encompass files have new names
NEWS	4	Feb 16	TOXLINE no longer being updated
NEWS	5	Apr 23	Search Derwent WPINDEX by chemical structure
NEWS	6	Apr 23	PRE-1967 REFERENCES NOW SEARCHABLE IN CAPLUS AND CA
NEWS	7	May 07	DGENE Reload
NEWS	8	Jun 20	Published patent applications (A1) are now in USPATFULL
NEWS	9	JUL 13	New SDI alert frequency now available in Derwent's DWPI and DPCI
NEWS	10	Aug 23	In-process records and more frequent updates now in MEDLINE
NEWS	11	Aug 23	PAGE IMAGES FOR 1947-1966 RECORDS IN CAPLUS AND CA
NEWS	12	Aug 23	Adis Newsletters (ADISNEWS) now available on STN
NEWS	13	Sep 17	IMSworld Pharmaceutical Company Directory name change to PHARMASEARCH
NEWS	14	Oct 09	Korean abstracts now included in Derwent World Patents Index
NEWS	15	Oct 09	Number of Derwent World Patents Index updates increased
NEWS	16	Oct 15	Calculated properties now in the REGISTRY/ZREGISTRY File

NEWS EXPRESS	August 15 CURRENT WINDOWS VERSION IS V6.0c, CURRENT MACINTOSH VERSION IS V6.0 (ENG) AND V6.0J (JP), AND CURRENT DISCOVER FILE IS DATED 07 AUGUST 2001
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NEWS INTER	General Internet Information
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NEWS PHONE	Direct Dial and Telecommunication Network Access to STN
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=> file biosis caplus embase medline scisearch
COST IN U.S. DOLLARS                                    SINCE FILE      TOTAL
                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         0.15       0.15

FILE 'BIOSIS' ENTERED AT 18:57:06 ON 19 OCT 2001
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FILE 'SCISEARCH' ENTERED AT 18:57:06 ON 19 OCT 2001
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=> s microbial (w) production
L1        2893 MICROBIAL (W) PRODUCTION

=> s L1 and (amino (w) acids)
L2         190 L1 AND (AMINO (W) ACIDS)

=> s L2 and Corynebacterium
L3          28 L2 AND CORYNEBACTERIUM

=> L3 and lysine
L4          13 L3 AND LYSINE

=> L3 and ((export) (w) (gene or carrier))
L5           0 L3 AND ((EXPORT) (W) (GENE OR CARRIER))

=> s L3 and export (w) gene
L6           0 L3 AND EXPORT (W) GENE

=> s export (w) gene
L7         166 EXPORT (W) GENE

=> s L3 and L7
L8           0 L3 AND L7

=> s L3 (p) L7
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L13 (P) L37'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L14 (P) L38'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L15 (P) L39'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L16 (P) L40'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L17 (P) L41'
L9           0 L3 (P) L7
```

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=>
=> s L2 and L7
L10          0 L2 AND L7

=> s L2 and export (w) gene
L11          0 L2 AND EXPORT (W) GENE

=> s L7 and microb?
L12         61 L7 AND MICROB?

=> s L12 and Corynebacterium
L13          1 L12 AND CORYNEBACTERIUM

=> dup rem L3
PROCESSING COMPLETED FOR L3
L14          26 DUP REM L3 (2 DUPLICATES REMOVED)

=> dup rem L4
PROCESSING COMPLETED FOR L4
L15          13 DUP REM L4 (0 DUPLICATES REMOVED)

=> dis L13 ibib kwic

L13  ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2001 ACS
ACCESSION NUMBER:        1997:475788  CAPLUS
DOCUMENT NUMBER:         127:172154
TITLE:                   L-Lysine export from Corynebacterium
                         glutamicum. Physiological and molecular-biological
                         characterization of the carrier-mediated export of a
                         primary metabolite
AUTHOR(S):               Vrljic, Maria-Marina
CORPORATE SOURCE:        Inst. Biotechnologie, Forschungszentrum Julich
                         G.m.b.H., Juelich, D-52425, Germany
SOURCE:                  Ber. Forschungszent. Juelich (1997), Juel-3349, 1-115
                         pp.
                         CODEN: FJBEE5; ISSN: 0366-0885
DOCUMENT TYPE:           Report
LANGUAGE:                German
TI   L-Lysine export from Corynebacterium glutamicum. Physiological
     and molecular-biological characterization of the carrier-mediated export
     of a primary metabolite
AB   The gene for the Lys-excretion carrier was isolated from C. glutamicum
and
     the Lys export was analyzed physiol.  A system was established which
     induces the Lys excretion in dependence of Met.  The mutant NA8, defect
in
     Lys export, was isolated.  The L-Lys export (LysE) gene encodes a
     polypeptide of 236 amino acids with the potential to span the membrane 6
     times and a mol. wt. of 2,5425 Da.  With overexpressed LysE, L-Lys was
     exported at a rate of 3.76 nmol/min/mg dry wt. which lead to a 10-fold
     increased Lys excretion rate.  The LysG (governing L-Lys export)
     gene is localized immediately adjacent to LysE, but is
     transcripted divergently.  The deduced polypeptide (290 amino acids) has
a
     helix-turn-helix motive at the aminoterminus.  At the sequence level,
LysG
     shows .ltoreq.35% identity to prokaryotic, autoregulatory transcriptional
```

regulators. LysG acts in trans and leads to a decrease of the Lys excretion by C. glutamicum. For the Lys-export defect mutant C. glutamicum NA8, the transition G1594.fwdarw.A1594 was shown which results in a stop-codon in the LysE gene. The resulting LysE polypeptide in C. glutamicum NA8 is shortened for 43 amino acids. The growth of a LysEG deletion mutant was abolished on a minimal medium in the presence of Lys-contg. dipeptides. The quantification of the intracellular L-Lys concns. revealed an accumulation of Lys .ltoreq.1,100 mM. The results suggest that the physiol. function of the Lys export carrier of C. glutamicum is to avoid extremely high intracellular Lys concns.

ST lysine excretion carrier **Corynebacterium** gene sequence; protein sequence **Corynebacterium** lysine excretion carrier

IT Amino acid transport (biological)
(carrier-mediated, export; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Helix-turn-helix
(gene lysG protein; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Proteins (specific proteins and subclasses)
RL: BAC (Biological activity or effector, except adverse); BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(gene lysG, (governing lysine export); lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Genes (**microbial**)
RL: BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(lysE; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Genes (**microbial**)
RL: BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(lysG (governing lysine export); lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT **Corynebacterium** glutamicum
DNA sequences
Protein sequences
(lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Amino acid transporters
RL: BAC (Biological activity or effector, except adverse); BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(lysine-transporting, gene lysE; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT 63-68-3, L-Methionine, biological studies
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(induces lysine excretion; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT 184922-77-8, GenBank X96471-derived protein GI 1729755
RL: BAC (Biological activity or effector, except adverse); BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(lysine export from **Corynebacterium** glutamicum,

carrier-supported export of a primary metabolite)
IT 184922-76-7, GenBank X96471-derived protein GI 1729754 184922-78-9, GenBank X96471-derived protein GI 1729756
RL: BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)
IT 56-87-1, L-Lysine, biological studies
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)
IT 184343-19-9, GenBank X96471
RL: BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(nucleotide sequence; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

=> dis L14 1-26 ibib kwic

L14 ANSWER 1 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 2001:314459 BIOSIS
DOCUMENT NUMBER: PREV200100314459
TITLE: Effect of gluconic acid as a secondary carbon source on non-growing L-lysine producers cells of **Corynebacterium** glutamicum. Purification and properties of 6-phosphogluconate dehydrogenase.
AUTHOR(S): Bianchi, Daniella; Bertrand, Olivier; Haupt, Karsten; Coello, Nereida (1)
CORPORATE SOURCE: (1) Instituto de Biologia Experimental, Universidad Central
deVenezuela, Caracas, 1041-A: ncoello@uole.com.ve
Venezuela
SOURCE: Enzyme and Microbial Technology, (June 7, 2001) Vol. 28, No. 9-10, pp. 754-759. print.
ISSN: 0141-0229.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
TI Effect of gluconic acid as a secondary carbon source on non-growing L-lysine producers cells of **Corynebacterium** glutamicum. Purification and properties of 6-phosphogluconate dehydrogenase.
AB We studied the production of L-lysine in **Corynebacterium** glutamicum ATCC 21543 non growing cells obtained by nutrient limitation. Statistical analysis revealed significant differences in the L-lysine titers of. . .
IT . . .
Engineering; Methods and Techniques; Nutrition
IT Chemicals & Biochemicals
6-phosphogluconate dehydrogenase: amino acid sequence, analysis, molecular properties, pH, purification; L-lysine: **microbial production**, yield; **amino acids**: analysis; carbon sources; gluconic acid: secondary carbon source
ORGN . . .
Microorganisms; Irregular Nonsporing Gram-Positive Rods: Actinomycetes and Related Organisms, Eubacteria, Bacteria, Microorganisms; Microorganisms
ORGN Organism Name

Bacillus subtilis (Endospore-forming Gram-Positives); **Corynebacterium** glutamicum (Irregular Nonsporing Gram-Positive Rods): non-growing cells; Escherichia coli (Enterobacteriaceae); bacteria (Bacteria); microorganisms (Microorganisms)
ORGN Organism Superterms
Bacteria; Eubacteria; Microorganisms

L14 ANSWER 2 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 2001:421002 BIOSIS
DOCUMENT NUMBER: PREV200100421002
TITLE: L-glutamate fermentation and metabolic engineering: Studies on the L-glutamate production mechanism in Coryneform bacteria.
AUTHOR(S): Nakamatsu, Tsuyoshi
SOURCE: Nippon Nogeikagaku Kaishi, (Jun., 2001) Vol. 75, No. 6, pp. 683-686. print.
ISSN: 0002-1407.
DOCUMENT TYPE: General Review
LANGUAGE: Japanese
SUMMARY LANGUAGE: English
IT Major Concepts
Biochemistry and Molecular Biophysics; Bioprocess Engineering; Metabolism
IT Chemicals & Biochemicals
amino acids: large-scale **microbial production**; glutamate: large-scale **microbial production**; oxoglutarate dehydrogenase
ORGN Super Taxa
Irregular Nonsporing Gram-Positive Rods: Actinomycetes and Related Organisms, Eubacteria, Bacteria, Microorganisms
ORGN Organism Name
Corynebacterium spp. (Irregular Nonsporing Gram-Positive Rods)
ORGN Organism Superterms
Bacteria; Eubacteria; Microorganisms

L14 ANSWER 3 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 2001:174925 BIOSIS
DOCUMENT NUMBER: PREV200100174925
TITLE: MALDI-TOF MS for quantification of substrates and products in cultivations of **Corynebacterium** glutamicum.
AUTHOR(S): Wittmann, Christoph (1); Heinzle, Elmar
CORPORATE SOURCE: (1) Biochemical Engineering Institute, Saarland University, 66041, Saarbruecken: c.wittmann@rz.uni-sb.de Germany
SOURCE: Biotechnology and Bioengineering, (March 20, 2001) Vol. 72, No. 6, pp. 642-647. print.
ISSN: 0006-3592.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
TI MALDI-TOF MS for quantification of substrates and products in cultivations of **Corynebacterium** glutamicum.
IT Major Concepts

Biochemistry and Molecular Biophysics; Bioprocess Engineering; Methods and Techniques

IT Chemicals & Biochemicals
amino acids: microbial production
, quantitative analysis; products: quantitative analysis; substrates: quantitative analysis

L14 ANSWER 4 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2000:761605 CAPLUS
DOCUMENT NUMBER: 134:99608
TITLE: Development and use of miniaturized parallel experiment technology for bioprocess development
AUTHOR(S): Altenbach-Rehm, Jutta
CORPORATE SOURCE: Institut fur Biotechnologie, Julich, JUL-3782, Germany
SOURCE: Ber. Forschungszent. Juelich (2000), Juel-3782, a-f, i-iv, 1-233
CODEN: FJBEE5; ISSN: 0366-0885
DOCUMENT TYPE: Report
LANGUAGE: German

AB The fed-batch technique is nowadays the std. operation mode for high performance **microbial prodn.** processes. Shake flasks are widely used a simple bioreactors in batch process development. Because of uncontrolled changes in pH and reduced oxygen transfer rates parallel operated shake flasks can usually not be applied for microbial fed-batch process development. Due to the need to operate controlled stirred tank reactors the development of specific fermn. strategies is expensive and time consuming. To address these issues a miniature fed-batch technique was developed in cooperation with DASGIP mbH, Julich, and INFORS AG, Basel. Controlled batch and fed-batch fermns. can be performed in 16 parallel small scale bioreactors. The new technique allows the feeding of up to 4 different substrates and parallel pH control based on user-defined profiles. The feeding assembly is sterilized chem. using dimethylcarbonate. To overcome the limitations of shake flasks, small scale bubble columns were developed. Gas distribution is performed with a new type of sterile sparger. Transferring fed-batch fermns. from small scale bubble columns to a stirred tank reactor a scale up factor of 20 was achieved. Escherichia coli K12 was chosen to test the new parallel bioreactor technique. Compared to shake flask fermns. the cell concn. was 50% higher due to efficient oxygen transfer. In fed-batch fermns. with pH-controlled substrate feeding up to 35 g/l DCW were achieved. For the 1st time, a parallel optimization of feeding profiles in parallel small scale fed-batch expts. with successful scale-up to a lab. bioreactor was performed. Escherichia coli BL 21 (DE3) pLysS produces the recombinant enzyme GDP-.alpha.-D-mannose-pyrophosphorylase after induction with isopropyl-.beta.-D-thiogalactoside (IPTG). Single induction with 0,5 mM IPTG resulted in a low specific enzyme activity of 1,6 U/g DCW (dry cell wt.). For the optimization of enzyme expression a genetic algorithm was used. A final enzyme activity of 111 U/g DCW was achieved for optimal substrate and inducer feeding profiles. To demonstrate the advantages of this new parallel bioreactor technique different strains of industrial relevance were investigated. **Corynebacterium** glutamicum, Staphylococcus carnosus and Ashbya gossypii.

ST bioreactor bubble column fed batch fermn; GDP mannose pyrophosphorylase bubble column fed batch; Staphylococcus bubble column fed batch fermn;

isoleucine bubble column fed batch **Corynebacterium**; riboflavin bubble column fed batch Ashbya

IT **Amino acids**, biological studies
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(amino acid consumption in riboflavin prodn. by Ashybya gossypii in parallel bubble columns with fed-batch technique)

IT **Corynebacterium** glutamicum
(L-isoleucine prodn. by **Corynebacterium** glutamicum in parallel bubble columns with fed-batch technique)

IT 73-32-5P, L-Isoleucine, biological studies
RL: BMF (Bioindustrial manufacture); BPR (Biological process); BIOL (Biological study); PREP (Preparation); PROC (Process)
(L-isoleucine prodn. by **Corynebacterium** glutamicum in parallel bubble columns with fed-batch technique, amino acid consumption in riboflavin prodn. by Ashybya gossypii)

IT 61-90-5, L-Leucine, biological studies
RL: BPR (Biological process); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); PROC (Process)
(L-isoleucine prodn. by **Corynebacterium** glutamicum in parallel bubble columns with fed-batch technique, amino acid consumption in riboflavin prodn. by Ashybya gossypii)

L14 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:244776 CAPLUS
DOCUMENT NUMBER: 130:266420
TITLE: Method for **microbial production** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method
INVENTOR(S): Eikmanns, Bernd; Peters-Wendisch, Petra; Sahm, Hermann
PATENT ASSIGNEE(S): Forschungszentrum Julich G.m.b.H., Germany
SOURCE: PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9918228	A2	19990415	WO 1998-EP6210	19980930
WO 9918228	A3	19990520		
W: AU, BR, CA, CN, HU, ID, JP, KR, MX, RU, SK, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
DE 19831609	A1	19990415	DE 1998-19831609	19980714
AU 9911482	A1	19990427	AU 1999-11482	19980930
EP 1015621	A2	20000705	EP 1998-954301	19980930
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
BR 9813021	A	20000815	BR 1998-13021	19980930

PRIORITY APPLN. INFO.: DE 1997-19743894 A 19971004
DE 1998-19831609 A 19980714
WO 1998-EP6210 W 19980930

TI Method for **microbial production** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method

AB The invention relates to a method for **microbial prodn.** of **amino acids** of the aspartate and/or glutamate family in which the pyruvate carboxylase activity is increased by genetically changing the enzyme and/or the pyruvate carboxylase gene expression of a microorganism which produces the corresponding amino acid.

In addn., the invention relates to a pyruvate carboxylase gene and addnl. agents which can be used in the inventive method.

ST amino acid fermn **Corynebacterium** pyruvate carboxylase genetic engineering

IT **Corynebacterium** glutamicum
Fermentation
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

IT **Amino acids**, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

IT Genetic engineering
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and modification of **Corynebacterium** pyc gene in said method)

IT Genes (microbial)
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(pyc; **microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and modification of **Corynebacterium** pyc gene in said method)

IT 56-86-0P, L-Glutamic acid, preparation 56-87-1P, L-Lysine, preparation 72-19-5P, L-Threonine, preparation 74-79-3P, L-Arginine, preparation 672-15-1P, L-Homoserine
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

IT 9014-19-1, Pyruvate carboxylase 204116-18-7 208541-81-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

L14 ANSWER 6 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1999:175414 BIOSIS
DOCUMENT NUMBER: PREV199900175414
TITLE: Cloning of the transketolase gene and the effect of its dosage on aromatic amino acid production in **Corynebacterium** glutamicum.
AUTHOR(S): Ikeda, M. (1); Okamoto, K.; Katsumata, R.
CORPORATE SOURCE: (1) Technical Research Laboratories, Kyowa Hakko Kogyo Co., Ltd., Hofu, Yamaguchi, 747-8522 Japan
SOURCE: Applied Microbiology and Biotechnology, (Feb., 1999) Vol. 51, No. 2, pp. 201-206.
ISSN: 0175-7598.
DOCUMENT TYPE: Article

LANGUAGE: English

TI Cloning of the transketolase gene and the effect of its dosage on aromatic amino acid production in **Corynebacterium** glutamicum.

AB. . . enzyme of the non-oxidative pentose phosphate pathway. The effect of its overexpression on aromatic amino acid production was investigated in **Corynebacterium** glutamicum, a typical amino-acid-producing organism. For this purpose, the transketolase gene of the organism was cloned on the basis of. . . the presence of the gene in high copy numbers enabled tyrosine, phenylalanine and tryptophan producers to accumulate 5%-20% more aromatic **amino acids**. These results indicate that overexpressed transketolase activity operates to redirect the glycolytic intermediates toward the nonoxidative pentose phosphate pathway in. . .

IT Major Concepts

Bioprocess Engineering; Enzymology (Biochemistry and Molecular Biophysics); Molecular Genetics (Biochemistry and Molecular Biophysics)

IT Chemicals & Biochemicals

aromatic **amino acids: microbial production**; transketolase [EC 2.2.1.1]; **Corynebacterium** transketolase gene (Irregular Nonsporing Gram-Positive Rods)

L14 ANSWER 7 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1998:277651 CAPLUS

DOCUMENT NUMBER: 128:307587

TITLE: **Microbial production** of substances from aromatic metabolism

INVENTOR(S): Sprenger, Georg; Siewe, Ruth; Sahm, Hermann; Karutz, Martin; Sonke, Theodorus

PATENT ASSIGNEE(S): Forschungszentrum Juelich G.m.b.H., Germany; Holland Sweetener Co. V.o.F.

SOURCE: Ger. Offen., 14 pp.
CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19644566	A1	19980430	DE 1996-19644566	19961026
WO 9818936	A1	19980507	WO 1997-NL582	19971017
W: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, HU, ID, IL, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9747277	A1	19980522	AU 1997-47277	19971017
EP 934418	A1	19990811	EP 1997-909748	19971017
R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, SE, PT, FI				
CN 1241214	A	20000112	CN 1997-180908	19971017
JP 2001506486	T2	20010522	JP 1998-520318	19971017

PRIORITY APPLN. INFO.: DE 1996-19644566 A 19961026
WO 1997-NL582 W 19971017

TI **Microbial production** of substances from aromatic metabolism

IT Transport proteins
RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); BUU (Biological use, unclassified); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
(gene glf glucose facilitator protein, of Zymomonas mobilis; **microbial prodn.** of substances from arom. metab.)

IT Genes (microbial)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(glf, for glucose facilitator protein of Zymomonas mobilis; **microbial prodn.** of substances from arom. metab.)

IT Genes (microbial)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(glk, for glucokinase of Zymomonas mobilis; **microbial prodn.** of substances from arom. metab.)

IT Pentose phosphate pathway
(intermediates of, in amino acid manuf.; **microbial prodn.** of substances from arom. metab.)

IT Bacillus (bacterium genus)
Brevibacterium
Corynebacterium
Escherichia
Escherichia coli
Fermentation
Microorganism
Molecular cloning
Serratia
(**microbial prodn.** of substances from arom. metab.)

IT Transport proteins
RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); BUU (Biological use, unclassified); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
(**microbial prodn.** of substances from arom. metab.)

IT **Amino acids**, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(**microbial prodn.** of substances from arom. metab.)

IT Plasmids
(pZ4557tal; **microbial prodn.** of substances from arom. metab.)

IT Plasmids
(pZ4557tkt; **microbial prodn.** of substances from arom. metab.)

IT Plasmids
(pZ4557tkttal; **microbial prodn.** of substances from arom. metab.)

IT Genes (microbial)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(talB; **microbial prodn.** of substances from arom. metab.)

IT Genes (microbial)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(tktA; **microbial prodn.** of substances from arom.

metab.)
IT 9001-36-9P, Glucokinase
RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); BUU (Biological use, unclassified); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
(gene glk, of Zymomonas mobilis; **microbial prodn.** of substances from arom. metab.)
IT 585-18-2, Erythrose-4-phosphate
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(in amino acid manuf.; **microbial prodn.** of substances from arom. metab.)
IT 9014-46-4P, Transaldolase 9014-48-6P, Transketolase
RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); BUU (Biological use, unclassified); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
(**microbial prodn.** of substances from arom. metab.)
IT 63-91-2P, L-Phenylalanine, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(**microbial prodn.** of substances from arom. metab.)

L14 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1995:674124 CAPLUS
DOCUMENT NUMBER: 123:54314
TITLE: Enhancement of reduced NADP production for enhanced **microbial production** of biochemicals
INVENTOR(S): Kojima, Hiroyuki; Totsuka, Kazuhiko
PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan
SOURCE: PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9511985	A1	19950504	WO 1994-JP1791	19941026
W: AU, BR, CA, CN, CZ, HU, JP, KR, PL, RU, SK, US, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2175042	AA	19950504	CA 1994-2175042	19941026
AU 9480026	A1	19950522	AU 1994-80026	19941026
AU 687458	B2	19980226		
EP 733712	A1	19960925	EP 1994-931158	19941026
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
BR 9407907	A	19961126	BR 1994-7907	19941026
HU 74840	A2	19970228	HU 1996-1085	19941026
ZA 9503350	A	19961025	ZA 1995-3350	19950425
US 5830716	A	19981103	US 1996-619521	19960429
CN 1139956	A	19970108	CN 1994-194707	19961026
PRIORITY APPLN. INFO.:			JP 1993-270828	19931028
			WO 1994-JP1791	19941026

TI Enhancement of reduced NADP production for enhanced **microbial production** of biochemicals
AB The productivity of such substances as L-**amino acids**, antibiotics, vitamins, growth factors and physiol. active substances in

the fermn. using a microorganism is improved by improving the productivity of reduced NADP in the cells of the microorganisms. Construction of pMW::THY contg. the Escherichia coli transhydrogenase gene, and introduction of the plasmid into the L-threonine-producing Escherichia coli B-3996 were shown. The recombinant E. coli B-3996 produced L-threonine .apprx.10% higher than did the parental strain.

IT **Corynebacterium** glutamicum
Escherichia coli
Fermentation
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT **Amino acids**, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT Plasmid and Episome
(pHSG::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT Plasmid and Episome
(pMW::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT Plasmid and Episome
(pSU::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT 9014-18-0, Nicotinamide nucleotide transhydrogenase
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT 56-86-0P, L-Glutamic acid, preparation 56-87-1P, L-Lysine, preparation 61-90-5P, L-Leucine, preparation 63-91-2P, L-Phenylalanine, preparation 72-18-4P, L-Valine, preparation 72-19-5P, L-Threonine, preparation 73-32-5P, L-Isoleucine, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT 53-59-8P, NADP
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(reduced; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

L14 ANSWER 9 OF 26 SCISEARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: 95:184306 SCISEARCH
THE GENUINE ARTICLE: QK574
TITLE: METABOLIC DESIGN IN AMINO-ACID PRODUCING BACTERIUM **CORYNEBACTERIUM**-GLUTAMICUM
AUTHOR: SAHM H (Reprint); EGGELING L; EIKMANNS B; KRAMER R
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL, D-52425 JULICH, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: FEMS MICROBIOLOGY REVIEWS, (FEB 1995) Vol. 16, No. 2-3, pp. 243-252.
ISSN: 0168-6445.
DOCUMENT TYPE: Article; Journal

FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 36
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
TI METABOLIC DESIGN IN AMINO-ACID PRODUCING BACTERIUM **CORYNEBACTERIUM** -GLUTAMICUM
AB The Gram-positive bacterium **Corynebacterium** glutamicum is used for the industrial production of **amino acids**, e.g. of L-glutamate and L-lysine. In the last 10 years, genetic engineering and amplification of relevant structural genes have become.
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ST Author Keywords: **CORYNEBACTERIUM** GLUTAMICUM; AMINO ACID PRODUCTION; METABOLIC DESIGN; L-LYSINE; L-THREONINE; L-ISOLEUCINE
STP KeyWords Plus (R): L-THREONINE; L-LYSINE; BREVIBACTERIUM-LACTOFERMENTUM; HOMOSERINE DEHYDROGENASE; **MICROBIAL PRODUCTION**; RESISTANT MUTANTS; SPLIT PATHWAY; BIOSYNTHESIS; ISOLEUCINE; GENES

L14 ANSWER 10 OF 26 SCISEARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: 96:7187 SCISEARCH
THE GENUINE ARTICLE: TJ545
TITLE: METABOLIC DESIGN IN THE AMINO-ACID-PRODUCING BACTERIUM **CORYNEBACTERIUM**-GLUTAMICUM
AUTHOR: SAHM H (Reprint)
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL, D-52425 JULICH, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: FOLIA MICROBIOLOGICA, (1995) Vol. 40, No. 1, pp. 23-30. ISSN: 0015-5632.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 26
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
TI METABOLIC DESIGN IN THE AMINO-ACID-PRODUCING BACTERIUM **CORYNEBACTERIUM**-GLUTAMICUM
AB The Gram-positive bacterium **Corynebacterium** glutamicum is used for the industrial production of **amino acids**, e.g. of L-glutamate and L-lysine. By cloning and expressing the various genes of the L-lysine pathway in C. glutamicum we. . .
STP KeyWords Plus (R): L-THREONINE; BREVIBACTERIUM-LACTOFERMENTUM; HOMOSERINE DEHYDROGENASE; **MICROBIAL PRODUCTION**; LYSINE BIOSYNTHESIS; RESISTANT MUTANTS; SPLIT PATHWAY; GENES; AMPLIFICATION; FERMENTATION

L14 ANSWER 11 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1985:436156 CAPLUS
DOCUMENT NUMBER: 103:36156
TITLE: Optimization of amino acid production by automatic self-tuning digital control of redox potential
AUTHOR(S): Radjai, Mohammad K.; Hatch, Randolph T.; Cadman, Theodore W.
CORPORATE SOURCE: Dep. Chem. Nucl. Eng., Univ. Maryland, College Park, MD, 20742, USA
SOURCE: Biotechnol. Bioeng. Symp. (1984), 14(Symp. Biotechnol. Fuels Chem., 6th), 657-79
CODEN: BIBSBR; ISSN: 0572-6565

DOCUMENT TYPE: Journal
LANGUAGE: English
AB The **microbial prodn.** of homoserine [672-15-1], lysine [56-87-1], and valine [72-18-4] by an auxotrophic mutant of **Corynebacterium** glutamicum was investigated in a 16-L batch fermentor. Closed-loop digital control of redox potential was implemented using proportional-integral (PI) control of agitation rates. Due to the nonlinearity of the system, the PI controller parameters had to be changed during the course of the fermns. An automatic, self-tuning algorithm was developed for stable control of redox potential. This permitted exptl. optimization of total and selective amino acid prodn. Total amino acid yields of 35% from glucose were achieved compared to 23% reported in the literature for the same fermn.
IT **Corynebacterium** glutamicum
(amino acid manuf. with, optimization and redox potential control in)
IT **Amino acids**, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(manuf. of, by fermn.)

L14 ANSWER 12 OF 26 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 1
ACCESSION NUMBER: 1979:20814 CAPLUS
DOCUMENT NUMBER: 90:20814
TITLE: **Microbial production** of essential **amino acids** with **Corynebacterium** glutamicum mutants
AUTHOR(S): Nakayama, Kiyoshi; Araki, Kazumi; Kase, Hiroshi
CORPORATE SOURCE: Tokyo Res. Lab., Kyowa Hakko Kogyo Co., Ltd., Machida, Japan
SOURCE: Adv. Exp. Med. Biol. (1978), 105(Nutr. Improv. Food Feed Proteins), 649-61
CODEN: AEMBAP; ISSN: 0065-2598
DOCUMENT TYPE: Journal
LANGUAGE: English
TI **Microbial production** of essential **amino acids** with **Corynebacterium** glutamicum mutants
AB **Amino acids** produced by microbial processes are generally L-forms. The stereospecificity of the **amino acids** produced by fermn. makes the process advantageous compared with synthetic processes. Microorganisms employed in microbial processes for amino acid prodn. are divided into 4 classes: wild-type, auxotrophic mutant, regulatory mutant, and auxotrophic regulatory mutant. Using such mutants of **Corynebacterium** glutamicum, all the essential **amino acids** but L-methionine are now being produced by direct fermn. from cheap C sources such as carbohydrate materials or acetic acid.
ST amino acid manuf **Corynebacterium**
IT **Corynebacterium** glutamicum
(amino acid manuf. by)
IT Fermentation
(**amino acids**, by **Corynebacterium** glutamicum)
IT **Amino acids**, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)

(manuf. of, from carbohydrates by **Corynebacterium** glutamicum)

L14 ANSWER 13 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1976:521806 CAPLUS
DOCUMENT NUMBER: 85:121806
TITLE: **Microbial production** of amino acid
INVENTOR(S): Tsuchida, Takayasu; Yoshihara, Yasuhiko; Kubota, Koji;
Hirose, Yoshio
PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan
SOURCE: Japan. Kokai, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 51061690	A2	19760528	JP 1974-134879	19741122

TI **Microbial production** of amino acid
ST amino acid manuf Brevibacterium; **Corynebacterium** amino acid manuf
IT Brevibacterium
Corynebacterium
(amino acid manuf. by)
IT Fermentation
(**amino acids**, by **Corynebacterium** or Brevibacterium)
IT 56-45-1P, preparation 73-22-3P, preparation
RL: PREP (Preparation)
(by fermn., with **Corynebacterium**)

L14 ANSWER 14 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1975:529947 CAPLUS
DOCUMENT NUMBER: 83:129947
TITLE: **Microbial production** of **amino acids**. VI. Formation of L-**amino acids** from DL-.alpha.-hydroxycarboxylic acids
AUTHOR(S): Matsushima, Hirochika; Murata, Keijiro; Mase, Yasuo
CORPORATE SOURCE: Ferment. Res. Lab., Sankyo Co., Ltd., Tanashi, Japan
SOURCE: Hakko Kogaku Zasshi (1975), 53(7), 443-9
CODEN: HKZAA2
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
TI **Microbial production** of **amino acids**. VI. Formation of L-**amino acids** from DL-.alpha.-hydroxycarboxylic acids
AB Formation of L-**amino acids** from DL-.alpha.-hydroxycarboxylic acids was studied. L-.alpha.-aminobutyric acid [1492-24-6] was formed in a medium contg. DL-.alpha.-hydroxybutyric acid [600-15-7] by various bacteria belonging to Aerobacter, Bacillus, **Corynebacterium**, Escherichia, Flavobacterium, Micrococcus, Proteus, Pseudomonas, Sarcina, Staphylococcus, and other genera. A. cloacae IAM 1221 was cultured in a medium contg. DL-.alpha.-bromobutyric acid [2385-70-8] (hydrolyzed to hydroxybutyric acid). L-.alpha.-aminobutyric acid was isolated from the culture broth and

identified by thin-layer chromatog., elementary anal., and by its specific rotation and IR spectrum. Formation of valine [72-18-4], leucine [61-90-5], or phenylalanine [63-91-2] from DL-.alpha.-hydroxycarboxylic acids by Brevibacterium roseum ATCC 13825 was studied. Yields (mole) from the cultures were 84.22, 95.7, and 47.7%, resp. An amino-group donor (glutamic acid) was needed besides the bacterial cells and DL-.alpha.-hydroxycarboxylic acid for the enzymic formation of **amino acids**.

L14 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1975:137747 CAPLUS
DOCUMENT NUMBER: 82:137747
TITLE: **Microbial production** of **amino acids**
INVENTOR(S): Kubota, Koji; Yoshihara, Yasuhiko; Okada, Hiroshi
PATENT ASSIGNEE(S): Ajinomoto Co., Inc.
SOURCE: Japan. Kokai, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 49109585	A2	19741018	JP 1973-24049	19730228
JP 51038796	B4	19761023		

TI **Microbial production** of **amino acids**
AB **Amino acids** were produced by a microbe cultured in a propionic acid medium. Thus, Brevibacterium flavum ATCC 14,067, Micrococcus glutamicus ATCC 13,032, **Corynebacterium** acetoacidophilum ATCC 13,870, Microbacterium ammoniaphilum ATCC 15,354, and B. flavum FERM-P 1684 were cultured with shaking at 31.degree. for 48 hr in a medium (pH 7.5) contg. propionic acid 2, (NH4)2SO4 1, KH2PO4 0.1, MgSO4.cntdot.7H2O 0.04, NaCl 0.1, and soybean protein hydrolysate (total N = 7%) 0.2% plus biotin 2 and thiamine.cntdot.HCl 200 .mu.g/l. Prodn. of L-glutamic acid by each organism was 4.3, 4.2, 3.9, 4.0, and 2.5 mg/ml, resp. B. flavum FERM-P 1684 also produced N-acetylglutamine at 0.4 mg/ml.
IT **Corynebacterium** acetoacidophilum
(glutamic acid manuf. by, from propionic acid)

L14 ANSWER 16 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1973:56392 CAPLUS
DOCUMENT NUMBER: 78:56392
TITLE: **Microbial production** of **amino acids** from aromatic compounds. I. Screening of aromatic compound-assimilating bacteria
AUTHOR(S): Yamamoto, Masao; Nishida, Hiroshi; Inui, Taiji; Ozaki, Asaichiro
CORPORATE SOURCE: Cent. Res. Lab., Sanraku-Ocean Co., Ltd., Fujisawa, Japan
SOURCE: Hakko Kogaku Zasshi (1972), 50(12), 868-75

CODEN: HKZAA2
DOCUMENT TYPE: Journal
LANGUAGE: English
TI **Microbial production** of **amino acids** from aromatic compounds. I. Screening of aromatic compound-assimilating bacteria
AB In an attempt to produce **amino acids** from aromatic compds. by fermn., bacterial stock cultures in this lab. were examd. for their assimilability of benzoate and salicylate; 96 strains from 97 glutamate-producing cultures assimilated benzoic acid. Then, 10 type-strains of the glutamate-producing strains were tested for their assimilability of 40 aromatic compds. 16 of the compds. were assimilated. These were benzoic acid, m-hydroxybenzoic acid, p-hydroxybenzoic acid, 2,4-dihydroxybenzoic acid, 2,5-dihydroxybenzoic acid, 3,4-dihydroxy-benzoic acid, 3,5-dihydroxybenzoic acid, phenylacetic acid, phenylpyruvic acid, .beta.-phenylpropionic acid, cinnamic acid, benzal dehyde, benzyl alc., phenol, catechol, and resorcinol. A sizable amt. of L-glutamic acid was produced from the assimilated compds. by these glutamate-producing bacteria, benzoate, esp., serving as the best substrate.
IT Brevibacterium
Brevibacterium lactofermentum
Corynebacterium acetoglutamicum
Microbacterium ammoniaphilum
Micrococcus glutamicus
(glutamic acid formation by, from arom. compds.)

L14 ANSWER 17 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1971:84222 CAPLUS
DOCUMENT NUMBER: 74:84222
TITLE: Utilization of hydrocarbons by microorganisms. XXI. Biochemical studies of **microbial production** of .alpha.-ketoglutarate, L-glutamate, and DL-alanine from hydrocarbons
AUTHOR(S): Imada, Yukio; Yamada, Koichi
CORPORATE SOURCE: Fac. Agric., Univ. Tokyo, Tokyo, Japan
SOURCE: Agr. Biol. Chem. (1971), 35(1), 18-26
CODEN: ABCHA6
DOCUMENT TYPE: Journal
LANGUAGE: English
TI Utilization of hydrocarbons by microorganisms. XXI. Biochemical studies of **microbial production** of .alpha.-ketoglutarate, L-glutamate, and DL-alanine from hydrocarbons
AB Strain S10B1 of **Corynebacterium** hydrocarboclastus produced .alpha.9ketoglutaric acid (I), LGlutamate, and DLAlanine from nAlkanes in a thiam (II)Limited medium supplemented with Fe2+. The replacement of hydrocarbon substrate by sugars such as glucose not only decreased the yields, but also reversed the order of the yields among the 3 products. This phenomenon was explained by a metabolic pathway in relation to the role of II. Slow O uptake in the presence of pyruvate and I by IIDeficient cells supported the presumption that II limitation resulted in deficiency of a cofactor in the enzymic oxidn. of pyruvate and I. Activities of terminal enzymes in the synthesis of LGlutamate and DLLanine were detd. and discussed. Three intermediates were detected in the culture broth.
ST **Corynebacterium** ketoglutarate prodn; ketoglutarate prodn

Corynebacterium; glutamate prodn **Corynebacterium**; alanine prodn **Corynebacterium**; thiamine **Corynebacterium**; hydrocarbons ultilization bacteria; bacteria hydrocarbons utilization

IT **Corynebacterium**
(hydrocarboclastus, **amino acids** formation by, from hydrocarbons)

IT 59-43-8, biological studies
RL: BIOL (Biological study)
(**amino acids** formation from paraffins by **Corynebacterium** hydrocarboclastus in response to)

L14 ANSWER 18 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1970:475660 CAPLUS
DOCUMENT NUMBER: 73:75660
TITLE: **Microbial production** of L-glutamic acid
PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd.
SOURCE: Fr. Demande, 11 pp.
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2009795		19700206		

PRIORITY APPLN. INFO.: JP 19680531

TI **Microbial production** of L-glutamic acid

AB L-Glutamic acid (I) is prepd. by aerobic cultivation of **Corynebacterium** or Brevibacterium in liq. media contg. C1-3 alcs. as C source and penicillin. Thus, B. vitalumen var propanolophilum ATCC 21391 was grown in a medium contg. PrOH 50, corn steep liquor 4, KH_2PO_4 2, $MgSO_4 \cdot 7H_2O$ 0.5, Fe^{2+} 0.01, Mn^{2+} 0.01, urea 4 g/l., with the addn. of 100 .mu.g biotin and penicillin G (K salt) 10 units/l., at 32.degree. and pH 6.5-8.0 with shaking for 96 hr to give 23.1 g I/l. (46.2% based on PrOH). PrOH and penicillin were added in portions during the fermentation. Without penicillin addn., the yield was 6.4% I.

ST Brevibacterium glutamate prodn; glutamate prodn Brevibacterium; **amino acids Corynebacterium**; **Corynebacterium amino acids**; penicillin bacteria glutamate

IT **Corynebacterium**
(melassecola and petrophylum, glutamic acid manuf. by)

L14 ANSWER 19 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1970:508239 CAPLUS
DOCUMENT NUMBER: 73:108239
TITLE: **Microbial production** of L-threonine
INVENTOR(S): Nakayama, Kiyoshi; Kase, Hiroshi
PATENT ASSIGNEE(S): Kyowa Fermentation Industry Co. Ltd.
SOURCE: Ger. Offen., 22 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 1817666	A	19700827	DE 1968-1817666	19681224

TI **Microbial production** of L-threonine

AB Various microorganisms, e.g. Aerobacter [Enterobacter] aerogenes, Serratia marcescens, or Arthrobacter paraffineus, cultured for producing L-threonine required 2 or 3 of the **amino acids** isoleucine, methionine, lysine, or diaminopimelic acid. The microorganisms were cultured aerobically in an aq. medium contg. the optimal (or less) amts. of the required **amino acids**. Thus, E. aerogenes NM-IS-5 (ATCC 21,215) was cultured 96 hr at 30.degree. in medium contg. glucose 5, (NH4)2SO4 1.4, KH2PO4 0.05, K2HPO4 0.05, MgSO4.7H2O 0.025, FeSO4.7H2O 0.001, MnSO4.4H2O 0.001, and CaCO3 2% and isoleucine 50, methionine 100, and diaminopimelic acid 200 mg/l. to give 7.8 g L-threonine/l.

ST **microbial prodn** threonine; threonine **microbial prodn**; Aerobacter threonine fermn; amino acid prodn fermn

IT **Corynebacterium**
(glutamicum, threonine manuf. by)

L14 ANSWER 20 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1970:401150 CAPLUS
DOCUMENT NUMBER: 73:1150
TITLE: **Microbial production** of L-threonine. II. Production by .alpha.-amino-.beta.-hydroxyvaleric acid resistant mutants of glutamate producing bacteria
AUTHOR(S): Shiio, Isamu; Nakamori, Shigeru
CORPORATE SOURCE: Cent. Res. Lab., Ajinomoto Co., Inc., Kawasaki, Japan
SOURCE: Agr. Biol. Chem. (1970), 34(3), 448-56
CODEN: ABCHA6
DOCUMENT TYPE: Journal
LANGUAGE: English

TI **Microbial production** of L-threonine. II. Production by .alpha.-amino-.beta.-hydroxyvaleric acid resistant mutants of glutamate producing bacteria

AB A mutant strain of Brevibacterium flavum was able to grow in a medium contg. 5 mg DL-threo-.alpha.-amino-.beta.-hydroxyvaleric acid (AHV)/ml; 1 mg AHV/ml inhibited the growth of the parental strain by >90%. Further treatment of the AHV-resistant strain with the mutagen, N-methyl-N'-nitro-N-nitrosoguanidine, produced a bacterial strain that was able to grown on 8 mg AHV/ml; this mutant produced 13.5 g L-threonine/l., an amt. 30% more than that produced by the parental strain. A similarly derived mutant of **Corynebacterium** acetoacidophilum resistant to AHV produced 6.1 g threonine/l. Other **amino acids** biosynthesized by the bacteria were discussed in relation to the regulation of threonine synthesis.

ST threonine prodn bacterial; **corynebacterium** threonine prodn; Brevibacterium threonine prodn; mutations bacteria threonine; bacteria mutations threonine; aminohydroxyvalerate bacteria

IT **Corynebacterium**
(acetoacidophilum, tryptophan formation from aminohydroxyvaleric acid

by)

L14 ANSWER 21 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1970:123860 BIOSIS
DOCUMENT NUMBER: BA51:33860
TITLE: **MICROBIAL PRODUCTION** OF **AMINO** **-ACIDS** FROM HYDRO CARBONS PART 4 L GLUTAMIC-ACID PRODUCTION BY **CORYNEBACTERIUM**-HYDROCARBOCLASTUS-R-7.
AUTHOR(S): SHIIO I; UCHIO R
SOURCE: AMINO ACID NUCLEIC ACID, (1969) (19), 88-96. CODEN: HATAA4. ISSN: 0517-6174.
FILE SEGMENT: BA; OLD
LANGUAGE: Unavailable
TI **MICROBIAL PRODUCTION** OF **AMINO-ACIDS** FROM HYDRO CARBONS PART 4 L GLUTAMIC-ACID PRODUCTION BY **CORYNEBACTERIUM**-HYDROCARBOCLASTUS-R-7.

L14 ANSWER 22 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS DUPLICATE 2
ACCESSION NUMBER: 1970:106213 BIOSIS
DOCUMENT NUMBER: BA51:16213
TITLE: **MICROBIAL PRODUCTION** OF **AMINO** **-ACIDS** FROM HYDRO CARBONS PART 4 L GLUTAMIC-ACID PRODUCTION BY **CORYNEBACTERIUM**-HYDROCARBOCLASTUS R-7.
AUTHOR(S): SHIIO I; UCHIO R
SOURCE: J GEN APPL MICROBIOL, (1969) 15 (1), 65-84. CODEN: JGAMA9. ISSN: 0022-1260.
FILE SEGMENT: BA; OLD
LANGUAGE: Unavailable
TI **MICROBIAL PRODUCTION** OF **AMINO-ACIDS** FROM HYDRO CARBONS PART 4 L GLUTAMIC-ACID PRODUCTION BY **CORYNEBACTERIUM**-HYDROCARBOCLASTUS R-7.

L14 ANSWER 23 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1967:514494 CAPLUS
DOCUMENT NUMBER: 67:114494
TITLE: **Microbial production** of **amino acids** from hydrocarbons. III. L-Ornithine production by an arginine auxotrophic mutant of **Corynebacterium** hydrocarboclastus
AUTHOR(S): Ishu, Ryosuke; Ishii, Ryosuke; Shiio, Isamu
CORPORATE SOURCE: Ajinomoto Co., Inc., Kawasaki, Japan
SOURCE: J. Gen. Appl. Microbiol. (1967), 13(3), 3303-12 CODEN: JGAMA9
DOCUMENT TYPE: Journal
LANGUAGE: English
TI **Microbial production** of **amino acids** from hydrocarbons. III. L-Ornithine production by an arginine auxotrophic mutant of **Corynebacterium** hydrocarboclastus
AB cf. CA 67: 89718u. The arginine auxotrophic mutant strain RN-362 of C. hydrocarboclastus R-7 was used to study L-ornithine productiion from hydrocarbons, in a fermentation medium contg. various n-alkanes. L-Ornithine production required L-arginine at the optimum level of 0.5-1.0 g./l. of medium; an excess inhibited the biosynthesis of L-ornithine. (NH4)2HPO4 was the best source of N and, at 2% in a neutral to slightly acidic pH, gave the highest level of L-ornithine production and cell

growth; NH4OAc, KNO3, and (NH4)2CO3 proved less suitable because of a drop in pH along with the accumulation of a large amt. of .alpha.-ketoglutaric acid, pyruvic acid, and proline in the growth medium. Of 17 C sources, n-tetradecane best supported cell growth and L-ornithine production and the other C13-C17 n-alkanes did so moderately, while kerosene and light oil produced good cell growth but only a small amt. of L-ornithine. Addn. of 3 g. yeast ext. and 0.5 g. L-arginine-HCl to 1 l. of medium enhanced L-ornithine production. A similar effect was achieved by replacing the yeast ext. with various **amino acids** at 0.01% in the medium. L-Methionine was most effective for the production of L-ornithine, while L-lysine, L-cysteine, L-cystine, L-histidine, and L-phenylalanine were less so, in decreasing order. **Amino acids** enhance L-ornithine production by stimulating hydrocarbon oxidn. and cell growth.

ST HYDROCARBONS USE BACTERIA; BACTERIA HYDROCARBONS USE; ALKANES USE BACTERIA; **AMINO ACIDS** PRODN HYDROCARBONS; ORNITHINE PRODN HYDROCARBONS; PARAFFINS UTILIZATION BACTERIA

IT **Corynebacterium**
(hydrocarboclastus, ornithine formation from hydrocarbons by)

IT Hydrocarbons, biological studies
RL: BIOL (Biological study)
(ornithine formation from, by **Corynebacterium** hydrocarboclastus)

IT 70-26-8
RL: FORM (Formation, nonpreparative)
(formation of, from hydrocarbons by **Corynebacterium** hydrocarboclastus)

L14 ANSWER 24 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1967:489718 CAPLUS
DOCUMENT NUMBER: 67:89718
TITLE: **Microbial production** of **amino acids** from hydrocarbons. II. Isolationf good hycarbon utilizers and amino acid production by their auxotrophs
AUTHOR(S): Ishii, Ryosuke; Otsuka, Shinichiro; Shiio, Isamu
CORPORATE SOURCE: Central Res. Labs., Ajinomoto Co., Inc., Kawasaki, Japan
SOURCE: J. Gen. Appl. Microbiol. (1967), 13(2), 217-25
CODEN: JGAMA9
DOCUMENT TYPE: Journal
LANGUAGE: English

TI **Microbial production** of **amino acids** from hydrocarbons. II. Isolationf good hycarbon utilizers and amino acid production by their auxotrophs

AB cf. CA 59: 14313h. Nine microorganisms, which showed good growth on long-chain aliphatic hydrocarbons, were isolated by an enrichment culture method, followed by a single colony isolation technique. They included 5 strains of Alcaligenes marshallii, 2 strains of **Corynebacterium** hydrocarboclastus, and 2 strains of yeast. Various auxotrophic mutants were derived from these microorganisms. The mutants accumulated the following **amino acids** from aliphatic hydrocarbons; L-ornithine, L-valine, L-glutamic acid, L-leucine, L-tyrosine, L-alanine, L-proline, L-aspartic acid, and L-lysine.

ST BACTERIA AMINO ACID PRODN; AMINO ACID PRODN BACTERIA; HYDROCARBONS

AMINO ACIDS; ALIPHATICS BACTERIA METAB
IT **Corynebacterium**
(hydrocarboclastus, amino acid fermentation of hydrocarbons by)
IT **Amino acids**, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(manuf. of, by fermentation of hydrocarbons)

L14 ANSWER 25 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1966:22870 CAPLUS
DOCUMENT NUMBER: 64:22870
ORIGINAL REFERENCE NO.: 64:4230g-h,4231a
TITLE: **Microbial production** of nucleotides
INVENTOR(S): Masuo, Eitaro; Okabayashi, Tadashi
PATENT ASSIGNEE(S): Shionogi & Co., Ltd.
SOURCE: 10 pp.
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 40010957		19650601	JP	19591214

TI **Microbial production** of nucleotides
AB Some bacteria strains of high nucleotide-forming activity were detected based on the results of the test developed by the authors, and compns. of media for promoting accumulation of nucleotides were also investigated. To evaluate the nucleotide-forming activity of bacteria, cells of nonexacting purine (I) auxotrophic mutant B 96 of Escherichia coli were mixed into the synthetic medium contg. no I for testing strains. The activity of nucleotide accumulation of the strains increased as the growth of the mutant increased. By this procedure, the following strains were found to be suitable for nucleotide production: Bacillus subtilis IFO 3061, B. firmus IFO 3330, B. circulans IFO 3342, B. megaterium IFO 3003, Alcaligenes viscosus AN-14, A. metalcaligenes 1021, Serratia marcescens 1008, S. plymuthica IFO 3055, Bacterium ketoglutaricum 1041, and new species of Brevibacterium and **Corynebacterium**. For promoting nucleotide production with these strains, **amino acids**, esp. L-glutamic acid (II), are necessary in the medium. Proteins or peptides contg. II are also effective for the strains having sufficient protease. Sufficient content of PO43- at pH 5.0-7.5 is also necessary for the medium. By cultivation under these conditions, AMP, CDP, UMP, and UDP are obtained.

L14 ANSWER 26 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1963:476777 CAPLUS
DOCUMENT NUMBER: 59:76777
ORIGINAL REFERENCE NO.: 59:14313h,14314a
TITLE: **Microbial production** of **amino acids** from hydrocarbons. I. Preliminary screening of glutamic acid-producing bacteria
AUTHOR(S): Shiio, Isamu; Otsuka, Shinichiro; Ishii, Ryosuke;

Katsuya, Nobu; Iizuka, Hiroshi
CORPORATE SOURCE: Ajinomoto Co., Inc., Kawasaki, Japan
SOURCE: J. Gen. Appl. Microbiol. (Tokyo) (1963), 9, 23-30
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
TI **Microbial production** of **amino acids** from hydrocarbons. I. Preliminary screening of glutamic acid-producing bacteria
AB Various bacteria utilized kerosene, light oil, heavy oil, and liquid paraffin as the only C source for growth and formation of L-glutamic acid (I). The highest level of I (281 .gamma./ml.) was obtained from kerosene by a strain of **Corynebacterium** hydrocarboclastus.

=> dis L15 1-13 ibib kwic

L15 ANSWER 1 OF 13 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 2001:314459 BIOSIS
DOCUMENT NUMBER: PREV200100314459
TITLE: Effect of gluconic acid as a secondary carbon source on non-growing L-**lysine** producers cells of **Corynebacterium** glutamicum. Purification and properties of 6-phosphogluconate dehydrogenase.
AUTHOR(S): Bianchi, Daniella; Bertrand, Olivier; Haupt, Karsten; Coello, Nereida (1)
CORPORATE SOURCE: (1) Instituto de Biologia Experimental, Universidad Central
deVenezuela, Caracas, 1041-A: ncoello@uole.com.ve
Venezuela
SOURCE: Enzyme and Microbial Technology, (June 7, 2001) Vol. 28, No. 9-10, pp. 754-759. print.
ISSN: 0141-0229.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
TI Effect of gluconic acid as a secondary carbon source on non-growing L-**lysine** producers cells of **Corynebacterium** glutamicum. Purification and properties of 6-phosphogluconate dehydrogenase.
AB We studied the production of L-**lysine** in **Corynebacterium** glutamicum ATCC 21543 non growing cells obtained by nutrient limitation. Statistical analysis revealed significant differences in the L-**lysine** titers of glucose, gluconic acid or glucose-gluconic acid cultures. Higher L-**lysine** titer obtained in batch cultures with mixed carbon sources or gluconic acid alone were found to be associated with a. . . dehydrogenase activity (6PGDH, E.C.1.1.1.44). This enzyme is a pivotal enzyme within the hexose monophosphate pathway, and thus of importance for L-**lysine** production. 6PGDH was purified and characterized. The purified enzyme migrates as a single band on sodium dodecyl sulfate-polyacrylamide gel electrophoresis. . .
IT . . .
Bioprocess Engineering; Methods and Techniques; Nutrition
IT Chemicals & Biochemicals
6-phosphogluconate dehydrogenase: amino acid sequence, analysis, molecular properties, pH, purification; L-**lysine**: **microbial production**, yield; **amino acids**: analysis; carbon sources; gluconic acid: secondary carbon source
ORGN . . .

Microorganisms; Irregular Nonsporing Gram-Positive Rods: Actinomycetes and Related Organisms, Eubacteria, Bacteria, Microorganisms; Microorganisms

ORGN Organism Name

Bacillus subtilis (Endospore-forming Gram-Positives); **Corynebacterium** glutamicum (Irregular Nonsporing Gram-Positive Rods): non-growing cells; Escherichia coli (Enterobacteriaceae); bacteria (Bacteria); microorganisms (Microorganisms)

ORGN Organism Superterms

Bacteria; Eubacteria; Microorganisms

RN 9001-82-5Q (6-PHOSPHOGLUCONATE DEHYDROGENASE)
9073-95-4Q (6-PHOSPHOGLUCONATE DEHYDROGENASE)
56-87-1 (L-**LYSINE**)
526-95-4 (GLUCONIC ACID)

L15 ANSWER 2 OF 13 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 2001:174925 BIOSIS
DOCUMENT NUMBER: PREV200100174925
TITLE: MALDI-TOF MS for quantification of substrates and products in cultivations of **Corynebacterium** glutamicum.
AUTHOR(S): Wittmann, Christoph (1); Heinzle, Elmar
CORPORATE SOURCE: (1) Biochemical Engineering Institute, Saarland University,
66041, Saarbruecken: c.wittmann@rz.uni-sb.de Germany
SOURCE: Biotechnology and Bioengineering, (March 20, 2001) Vol. 72,
No. 6, pp. 642-647. print.
ISSN: 0006-3592.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English
TI MALDI-TOF MS for quantification of substrates and products in cultivations of **Corynebacterium** glutamicum.
AB The application of MALDI-TOF MS for the quantification of **lysine**, alanine, and glucose is described. The method is based on using stable isotopes as internal standards and allows fast, sensitive,. . . concentrations of the analytes between 10 muM and 100 mM. The mean standard deviations from five replicates each were 4.3% (**lysine**), 3.7% (alanine), and 3.2% (glucose). In addition, sucrose could be measured by MALDI-TOF MS, but was not quantified due to. . .
IT Major Concepts

Biochemistry and Molecular Biophysics; Bioprocess Engineering; Methods and Techniques

IT Chemicals & Biochemicals

amino acids: microbial production, quantitative analysis; products: quantitative analysis; substrates: quantitative analysis

L15 ANSWER 3 OF 13 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2000:761605 CAPLUS
DOCUMENT NUMBER: 134:99608
TITLE: Development and use of miniaturized parallel experiment technology for bioprocess development
AUTHOR(S): Altenbach-Rehm, Jutta
CORPORATE SOURCE: Institut fur Biotechnologie, Julich, JUL-3782, Germany
SOURCE: Ber. Forschungszent. Juelich (2000), Juel-3782, a-f,

i-iv, 1-233
CODEN: FJBEE5; ISSN: 0366-0885
DOCUMENT TYPE: Report
LANGUAGE: German
AB The fed-batch technique is nowadays the std. operation mode for high performance **microbial prodn**. processes. Shake flasks are widely used a simple bioreactors in batch process development. Because of uncontrolled changes in pH and reduced oxygen transfer rates parallel operated shake flasks can usually not be applied for microbial fed-batch process development. Due to the need to operate controlled stirred tank reactors the development of specific fermn. strategies is expensive and time consuming. To address these issues a miniature fed-batch technique was developed in cooperation with DASGIP mbH, Julich, and INFORS AG, Basel. Controlled batch and fed-batch fermns. can be performed in 16 parallel small scale bioreactors. The new technique allows the feeding of up to 4 different substrates and parallel pH control based on user-defined profiles. The feeding assembly is sterilized chem. using dimethylcarbonate. To overcome the limitations of shake flasks, small scale bubble columns were developed. Gas distribution is performed with a new type of sterile sparger. Transferring fed-batch fermns. from small scale bubble columns to a stirred tank reactor a scale up factor of 20 was achieved. Escherichia coli K12 was chosen to test the new parallel bioreactor technique. Compared to shake flask fermns. the cell concn. was 50% higher due to efficient oxygen transfer. In fed-batch fermns. with pH-controlled substrate feeding up to 35 g/l DCW were achieved. For the 1st time, a parallel optimization of feeding profiles in parallel small scale fed-batch expts. with successful scale-up to a lab. bioreactor was performed. Escherichia coli BL 21 (DE3) pLysS produces the recombinant enzyme GDP-.alpha.-D-mannose-pyrophosphorylase after induction with isopropyl-.beta.-D-thiogalactoside (IPTG). Single induction with 0,5 mM IPTG resulted in a low specific enzyme activity of 1,6 U/g DCW (dry cell wt.). For the optimization of enzyme expression a genetic algorithm was used. A final enzyme activity of 111 U/g DCW was achieved for optimal substrate and inducer feeding profiles. To demonstrate the advantages of this new parallel bioreactor technique different strains of industrial relevance were investigated. **Corynebacterium** glutamicum, Staphylococcus carnosus and Ashbya gossypii.
ST bioreactor bubble column fed batch fermn; GDP mannose pyrophosphorylase bubble column fed batch; Staphylococcus bubble column fed batch fermn; isoleucine bubble column fed batch **Corynebacterium**; riboflavin bubble column fed batch Ashbya

IT **Amino acids**, biological studies
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(amino acid consumption in riboflavin prodn. by Ashybya gossypii in parallel bubble columns with fed-batch technique)

IT **Corynebacterium** glutamicum
(L-isoleucine prodn. by **Corynebacterium** glutamicum in parallel bubble columns with fed-batch technique)

IT 56-40-6, Glycine, biological studies 56-41-7, Alanine, biological studies 56-45-1, Serine, biological studies 56-84-8, Aspartic acid, biological studies 56-85-9, Glutamine, biological studies 56-86-0, Glutamic acid, biological studies 56-87-1, **Lysine**, biological studies 60-18-4, Tyrosine, biological studies 63-68-3, Methionine, biological studies 63-91-2, Phenylalanine, biological studies 72-18-4,

Valine, biological studies 72-19-5, Threonine, biological studies 73-22-3, Tryptophane, biological studies
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(amino acid consumption in riboflavin prodn. by Ashybya gossypii in parallel bubble columns with fed-batch technique)

IT 73-32-5P, L-Isoleucine, biological studies
RL: BMF (Bioindustrial manufacture); BPR (Biological process); BIOL (Biological study); PREP (Preparation); PROC (Process)
(L-isoleucine prodn. by **Corynebacterium** glutamicum in parallel bubble columns with fed-batch technique, amino acid consumption in riboflavin prodn. by Ashybya gossypii)

IT 61-90-5, L-Leucine, biological studies
RL: BPR (Biological process); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); PROC (Process)
(L-isoleucine prodn. by **Corynebacterium** glutamicum in parallel bubble columns with fed-batch technique, amino acid consumption in riboflavin prodn. by Ashybya gossypii)

L15 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:244776 CAPLUS
DOCUMENT NUMBER: 130:266420
TITLE: Method for **microbial production** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method
INVENTOR(S): Eikmanns, Bernd; Peters-Wendisch, Petra; Sahm, Hermann
PATENT ASSIGNEE(S): Forschungszentrum Julich G.m.b.H., Germany
SOURCE: PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9918228	A2	19990415	WO 1998-EP6210	19980930
WO 9918228	A3	19990520		
W: AU, BR, CA, CN, HU, ID, JP, KR, MX, RU, SK, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
DE 19831609	A1	19990415	DE 1998-19831609	19980714
AU 9911482	A1	19990427	AU 1999-11482	19980930
EP 1015621	A2	20000705	EP 1998-954301	19980930
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
BR 9813021	A	20000815	BR 1998-13021	19980930

PRIORITY APPLN. INFO.: DE 1997-19743894 A 19971004
DE 1998-19831609 A 19980714
WO 1998-EP6210 W 19980930

TI Method for **microbial production** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method

AB The invention relates to a method for **microbial prodn.** of **amino acids** of the aspartate and/or glutamate family in which the pyruvate carboxylase activity is increased by genetically changing the enzyme and/or the pyruvate carboxylase gene

expression of a microorganism which produces the corresponding amino acid.

In addn., the invention relates to a pyruvate carboxylase gene and addnl. agents which can be used in the inventive method.

ST amino acid fermn **Corynebacterium** pyruvate carboxylase genetic engineering

IT **Corynebacterium** glutamicum
Fermentation
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

IT **Amino acids**, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

IT Genetic engineering
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and modification of **Corynebacterium** pyc gene in said method)

IT Genes (microbial)
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(pyc; **microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and modification of **Corynebacterium** pyc gene in said method)

IT 56-86-0P, L-Glutamic acid, preparation 56-87-1P, L-**Lysine**, preparation 72-19-5P, L-Threonine, preparation 74-79-3P, L-Arginine, preparation 672-15-1P, L-Homoserine
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

IT 9014-19-1, Pyruvate carboxylase 204116-18-7 208541-81-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(**microbial prodn.** of **amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

L15 ANSWER 5 OF 13 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1999:175414 BIOSIS
DOCUMENT NUMBER: PREV199900175414
TITLE: Cloning of the transketolase gene and the effect of its dosage on aromatic amino acid production in **Corynebacterium** glutamicum.
AUTHOR(S): Ikeda, M. (1); Okamoto, K.; Katsumata, R.
CORPORATE SOURCE: (1) Technical Research Laboratories, Kyowa Hakko Kogyo Co., Ltd., Hofu, Yamaguchi, 747-8522 Japan
SOURCE: Applied Microbiology and Biotechnology, (Feb., 1999) Vol. 51, No. 2, pp. 201-206.
ISSN: 0175-7598.
DOCUMENT TYPE: Article
LANGUAGE: English

TI Cloning of the transketolase gene and the effect of its dosage on aromatic amino acid production in **Corynebacterium** glutamicum.

AB. . . enzyme of the non-oxidative pentose phosphate pathway. The effect of its overexpression on aromatic amino acid production was investigated in **Corynebacterium** glutamicum, a typical amino-acid-producing organism. For this purpose, the transketolase gene of the organism was cloned on the basis of. . . as a protein of approximately 83kDa in proportion to the copy numbers. Introduction of the plasmids into a tryptophan and **lysine** co-producer resulted in copy-dependent increases in tryptophan production along with concomitant decreases in **lysine** production. Furthermore, the presence of the gene in high copy numbers enabled tyrosine, phenylalanine and tryptophan producers to accumulate 5%-20% more aromatic **amino acids**. These results indicate that overexpressed transketolase activity operates to redirect the glycolytic intermediates toward the nonoxidative pentose phosphate pathway in. . .

IT Major Concepts
Bioprocess Engineering; Enzymology (Biochemistry and Molecular Biophysics); Molecular Genetics (Biochemistry and Molecular Biophysics)

IT Chemicals & Biochemicals
aromatic **amino acids**: **microbial production**; transketolase [EC 2.2.1.1]; **Corynebacterium** transketolase gene (Irregular Nonsporing Gram-Positive Rods)

L15 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1995:674124 CAPLUS
DOCUMENT NUMBER: 123:54314
TITLE: Enhancement of reduced NADP production for enhanced **microbial production** of biochemicals
INVENTOR(S): Kojima, Hiroyuki; Totsuka, Kazuhiko
PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan
SOURCE: PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9511985	A1	19950504	WO 1994-JP1791	19941026
W: AU, BR, CA, CN, CZ, HU, JP, KR, PL, RU, SK, US, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2175042	AA	19950504	CA 1994-2175042	19941026
AU 9480026	A1	19950522	AU 1994-80026	19941026
AU 687458	B2	19980226		
EP 733712	A1	19960925	EP 1994-931158	19941026
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
BR 9407907	A	19961126	BR 1994-7907	19941026
HU 74840	A2	19970228	HU 1996-1085	19941026
ZA 9503350	A	19961025	ZA 1995-3350	19950425
US 5830716	A	19981103	US 1996-619521	19960429
CN 1139956	A	19970108	CN 1994-194707	19961026
PRIORITY APPLN. INFO.:			JP 1993-270828	19931028
			WO 1994-JP1791	19941026

TI Enhancement of reduced NADP production for enhanced **microbial production** of biochemicals

AB The productivity of such substances as L-**amino acids**, antibiotics, vitamins, growth factors and physiol. active substances in the fermn. using a microorganism is improved by improving the productivity of reduced NADP in the cells of the microorganisms. Construction of pMW::THY contg. the Escherichia coli transhydrogenase gene, and introduction of the plasmid into the L-threonine-producing Escherichia coli B-3996 were shown. The recombinant E. coli B-3996 produced L-threonine .apprx.10% higher than did the parental strain.

IT **Corynebacterium** glutamicum
Escherichia coli
Fermentation
(enhancement of reduced NADP prodn. for enhanced **microbial prodn**. of biochems.)

IT **Amino acids**, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn**. of biochems.)

IT Plasmid and Episome
(pHSG::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn**. of biochems.)

IT Plasmid and Episome
(pMW::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn**. of biochems.)

IT Plasmid and Episome
(pSU::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn**. of biochems.)

IT 9014-18-0, Nicotinamide nucleotide transhydrogenase
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn**. of biochems.)

IT 56-86-0P, L-Glutamic acid, preparation 56-87-1P, L-**Lysine**, preparation 61-90-5P, L-Leucine, preparation 63-91-2P, L-Phenylalanine, preparation 72-18-4P, L-Valine, preparation 72-19-5P, L-Threonine, preparation 73-32-5P, L-Isoleucine, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn**. of biochems.)

IT 53-59-8P, NADP
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(reduced; enhancement of reduced NADP prodn. for enhanced **microbial prodn**. of biochems.)

L15 ANSWER 7 OF 13 SCISEARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: 95:184306 SCISEARCH
THE GENUINE ARTICLE: QK574
TITLE: METABOLIC DESIGN IN AMINO-ACID PRODUCING BACTERIUM **CORYNEBACTERIUM**-GLUTAMICUM
AUTHOR: SAHM H (Reprint); EGGELING L; EIKMANNS B; KRAMER R
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL, D-52425 JULICH, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: FEMS MICROBIOLOGY REVIEWS, (FEB 1995) Vol. 16, No. 2-3,

pp. 243-252.
ISSN: 0168-6445.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 36

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

TI METABOLIC DESIGN IN AMINO-ACID PRODUCING BACTERIUM **CORYNEBACTERIUM** -GLUTAMICUM

AB The Gram-positive bacterium **Corynebacterium** glutamicum is used for the industrial production of **amino acids**, e.g. of L-glutamate and L-**lysine**. In the last 10 years, genetic engineering and amplification of relevant structural genes have become fascinating methods for the construction of strains with desired genotypes. By cloning and expressing the various genes of the L-**lysine** pathway in C. glutamicum we could demonstrate that an increase of the flux of L-aspartate semialdehyde to L-**lysine** could be obtained in strains with increased dehydrodipicolinate synthase activity. By combined overexpression of deregulated aspartate kinase and dihydrodipicolinate synthase, the L-**lysine** secretion could be increased (10-20%). Recently we detected that in C. glutamicum two pathways exist for the synthesis of DL-diaminopimelate and L-**lysine**. Mutants defective in one pathway are still able to synthesize enough L-**lysine** for growth, but the L-**lysine** secretion is reduced to 50-70%. Using NMR spectroscopy, we could calculate how much of the L-**lysine** secreted into the medium is synthesized via each pathway. Amplification of the feedback inhibition-insensitive homoserine dehydrogenase and homoserine kinase in a high L-**lysine** overproducing strain enabled channelling of the carbon flow from the intermediate aspartate semialdehyde towards homoserine, resulting in a high accumulation. . . acid overproduction, the secretion into the culture medium also has to be noted. Recently it could be demonstrated that L-glutamate, L-**lysine** and L-isoleucine are not secreted via passive diffusion but via specific active carrier systems. Analysis of **lysine**-overproducing C. glutamicum strains indicates that this secretion carrier has a strong influence on the overproduction of this amino acid. Thus,. . .

ST Author Keywords: **CORYNEBACTERIUM** GLUTAMICUM; AMINO ACID PRODUCTION; METABOLIC DESIGN; L-**LYSINE**; L-THREONINE; L-ISOLEUCINE

STP KeyWords Plus (R): L-THREONINE; L-**LYSINE**; BREVIBACTERIUM-LACTOFERMENTUM; HOMOSERINE DEHYDROGENASE; **MICROBIAL PRODUCTION**; RESISTANT MUTANTS; SPLIT PATHWAY; BIOSYNTHESIS; ISOLEUCINE; GENES

L15 ANSWER 8 OF 13 SCISEARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: 96:7187 SCISEARCH
THE GENUINE ARTICLE: TJ545
TITLE: METABOLIC DESIGN IN THE AMINO-ACID-PRODUCING BACTERIUM **CORYNEBACTERIUM**-GLUTAMICUM
AUTHOR: SAHM H (Reprint)
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL, D-52425 JULICH, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: FOLIA MICROBIOLOGICA, (1995) Vol. 40, No. 1, pp. 23-30.
ISSN: 0015-5632.
DOCUMENT TYPE: Article; Journal

FILE SEGMENT: LIFE; AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 26
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

TI METABOLIC DESIGN IN THE AMINO-ACID-PRODUCING BACTERIUM **CORYNEBACTERIUM**-GLUTAMICUM

AB The Gram-positive bacterium **Corynebacterium** glutamicum is used for the industrial production of **amino acids**, e.g. of L-glutamate and L-**lysine**. By cloning and expressing the various genes of the L-**lysine** pathway in C. glutamicum we could demonstrate that an increase of the flux of L-4-aspartaldehydate to L-**lysine** could be obtained in strains with increased dihydro-dipicolinate synthase activity. Recently we detected that in C. glutamicum two pathways exist for the synthesis of DL-2,6-diaminopimelate and L-**lysine**. Mutants defective in one pathway are still able to synthesize enough L-**lysine** for growth but the L-**lysine** secretion is reduced to 50-70 %. Using NMR-spectroscopy we could calculate how much of the L-**lysine** secreted into the medium is synthesized via the one and the other pathway. Amplification of the feedback-inhibition-insensitive-homoserine dehydrogenase and homoserine kinase in a high L-**lysine**-overproducing strain made it possible to channell of the carbon now from the intermediate 4-aspartaldehydate toward homoserine, resulting in a high. . .

STP KeyWords Plus (R): L-THREONINE; BREVIBACTERIUM-LACTOFERMENTUM; HOMOSERINE DEHYDROGENASE; **MICROBIAL PRODUCTION; LYSINE** BIOSYNTHESIS; RESISTANT MUTANTS; SPLIT PATHWAY; GENES; AMPLIFICATION; FERMENTATION

L15 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1985:436156 CAPLUS
DOCUMENT NUMBER: 103:36156
TITLE: Optimization of amino acid production by automatic self-tuning digital control of redox potential
AUTHOR(S): Radjai, Mohammad K.; Hatch, Randolph T.; Cadman, Theodore W.
CORPORATE SOURCE: Dep. Chem. Nucl. Eng., Univ. Maryland, College Park, MD, 20742, USA
SOURCE: Biotechnol. Bioeng. Symp. (1984), 14(Symp. Biotechnol. Fuels Chem., 6th), 657-79
CODEN: BIBSBR; ISSN: 0572-6565
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The **microbial prodn.** of homoserine [672-15-1], **lysine** [56-87-1], and valine [72-18-4] by an auxotrophic mutant of **Corynebacterium** glutamicum was investigated in a 16-L batch fermentor. Closed-loop digital control of redox potential was implemented using proportional-integral (PI) control of agitation rates. Due to the nonlinearity of the system, the PI controller parameters had to be changed during the course of the fermns. An automatic, self-tuning algorithm was developed for stable control of redox potential. This permitted exptl. optimization of total and selective amino acid prodn. Total amino acid yields of 35% from glucose were achieved compared to 23% reported in the literature for the same fermn.

ST amino acid fermn redox potential control; optimization simulation

homoserine **lysine** valine fermn

IT **Corynebacterium** glutamicum
(amino acid manuf. with, optimization and redox potential control in)

IT **Amino acids**, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(manuf. of, by fermn.)

L15 ANSWER 10 OF 13 MEDLINE
ACCESSION NUMBER: 79079819 MEDLINE
DOCUMENT NUMBER: 79079819 PubMed ID: 727028
TITLE: **Microbial production** of essential amino acid with **Corynebacterium** glutamicum mutants.
AUTHOR: Nakayama K; Araki K; Kase H
SOURCE: ADVANCES IN EXPERIMENTAL MEDICINE AND BIOLOGY, (1978) 105 649-61.
Journal code: 2LU; 0121103. ISSN: 0065-2598.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197902
ENTRY DATE: Entered STN: 19900314
Last Updated on STN: 19970203
Entered Medline: 19790212

TI **Microbial production** of essential amino acid with **Corynebacterium** glutamicum mutants.

AB **Amino acids** produced by microbial process are generally L-forms. The stereospecificity of the **amino acids** produced by fermentation makes the process advantageous compared with synthetic process. Microorganisms employed in microbial process for amino acid production are divided into 4 classes; wild-type strain, auxotrophic mutant, regulatory mutant and auxotrophic regulatory mutant. Using such mutants of **Corynebacterium** glutamicum, all the essential **amino acids** but L-methionine are now being produced by "direct fermentation" from cheap carbon sources such as carbohydrate materials or acetic acid.

CT ***Amino Acids, Essential: BI, biosynthesis**
***Corynebacterium: ME, metabolism**
Fermentation
Kinetics
Leucine: BI, biosynthesis
Lysine: BI, biosynthesis
Mutation
Phenylalanine: BI, biosynthesis
Species Specificity
Stereoisomerism
Threonine: BI, biosynthesis
Tryptophan: BI, biosynthesis

RN 3617-44-5 (Phenylalanine); **56-87-1 (Lysine)**; 7005-03-0 (Leucine); 72-19-5 (Threonine); 73-22-3 (Tryptophan)

CN 0 (**Amino Acids**, Essential)

L15 ANSWER 11 OF 13 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1970:508239 CAPLUS
DOCUMENT NUMBER: 73:108239
TITLE: **Microbial production** of L-threonine

INVENTOR(S): Nakayama, Kiyoshi; Kase, Hiroshi
PATENT ASSIGNEE(S): Kyowa Fermentation Industry Co. Ltd.
SOURCE: Ger. Offen., 22 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 1817666	A	19700827	DE 1968-1817666	19681224

TI **Microbial production** of L-threonine
AB Various microorganisms, e.g. Aerobacter [Enterobacter] aerogenes, Serratia marcescens, or Arthrobacter paraffineus, cultured for producing L-threonine required 2 or 3 of the **amino acids** isoleucine, methionine, **lysine**, or diaminopimelic acid. The microorganisms were cultured aerobically in an aq. medium contg. the optimal (or less) amts. of the required **amino acids**. Thus, E. aerogenes NM-IS-5 (ATCC 21,215) was cultured 96 hr at 30.degree. in medium contg. glucose 5, (NH4)2SO4 1.4, KH2PO4 0.05, K2HPO4 0.05, MgSO4.7H2O 0.025, FeSO4.7H2O 0.001, MnSO4.4H2O 0.001, and CaCO3 2% and isoleucine 50, methionine 100, and diaminopimelic acid 200 mg/l. to give 7.8 g L-threonine/l.
ST **microbial prodn** threonine; threonine **microbial prodn**; Aerobacter threonine fermn; amino acid prodn fermn
IT **Corynebacterium**
(glutamicum, threonine manuf. by)

L15 ANSWER 12 OF 13 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1967:514494 CAPLUS
DOCUMENT NUMBER: 67:114494
TITLE: **Microbial production** of **amino acids** from hydrocarbons. III. L-Ornithine production by an arginine auxotrophic mutant of **Corynebacterium** hydrocarboclastus
AUTHOR(S): Ishu, Ryosuke; Ishii, Ryosuke; Shiio, Isamu
CORPORATE SOURCE: Ajinomoto Co., Inc., Kawasaki, Japan
SOURCE: J. Gen. Appl. Microbiol. (1967), 13(3), 3303-12
CODEN: JGAMA9
DOCUMENT TYPE: Journal
LANGUAGE: English
TI **Microbial production** of **amino acids** from hydrocarbons. III. L-Ornithine production by an arginine auxotrophic mutant of **Corynebacterium** hydrocarboclastus
AB cf. CA 67: 89718u. The arginine auxotrophic mutant strain RN-362 of C. hydrocarboclastus R-7 was used to study L-ornithine productiion from hydrocarbons, in a fermentation medium contg. various n-alkanes. L-Ornithine production required L-arginine at the optimum level of 0.5-1.0 g./l. of medium; an excess inhibited the biosynthesis of L-ornithine. (NH4)2HPO4 was the best source of N and, at 2% in a neutral to slightly acidic pH, gave the highest level of L-ornithine production and cell growth; NH4OAc, KNO3, and (NH4)2CO3 proved less suitable because of a drop in pH along with the accumulation of a large amt. of .alpha.-ketoglutaric acid, pyruvic acid, and proline in the growth medium. Of 17 C sources,

n-tetradecane best supported cell growth and L-ornithine production and the other C13-C17 n-alkanes did so moderately, while kerosene and light oil produced good cell growth but only a small amt. of L-ornithine. Addn.
of 3 g. yeast ext. and 0.5 g. L-arginine-HCl to 1 l. of medium enhanced L-ornithine production. A similar effect was achieved by replacing the yeast ext. with various **amino acids** at 0.01% in the medium. L-Methionine was most effective for the production of L-ornithine, while L-**lysine**, L-cysteine, L-cystine, L-histidine, and L-phenylalanine were less so, in decreasing order. **Amino acids** enhance L-ornithine production by stimulating hydrocarbon oxidn. and cell growth.

ST HYDROCARBONS USE BACTERIA; BACTERIA HYDROCARBONS USE; ALKANES USE BACTERIA; **AMINO ACIDS** PRODN HYDROCARBONS; ORNITHINE PRODN HYDROCARBONS; PARAFFINS UTILIZATION BACTERIA

IT **Corynebacterium**
(hydrocarboclastus, ornithine formation from hydrocarbons by)

IT Hydrocarbons, biological studies
RL: BIOL (Biological study)
(ornithine formation from, by **Corynebacterium** hydrocarboclastus)

IT 70-26-8
RL: FORM (Formation, nonpreparative)
(formation of, from hydrocarbons by **Corynebacterium** hydrocarboclastus)

L15 ANSWER 13 OF 13 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1967:489718 CAPLUS
DOCUMENT NUMBER: 67:89718
TITLE: **Microbial production** of **amino acids** from hydrocarbons. II. Isolationf good hycarbon utilizers and amino acid production by their auxotrophs
AUTHOR(S): Ishii, Ryosuke; Otsuka, Shinichiro; Shiio, Isamu
CORPORATE SOURCE: Central Res. Labs., Ajinomoto Co., Inc., Kawasaki, Japan
SOURCE: J. Gen. Appl. Microbiol. (1967), 13(2), 217-25
CODEN: JGAMA9
DOCUMENT TYPE: Journal
LANGUAGE: English

TI **Microbial production** of **amino acids** from hydrocarbons. II. Isolationf good hycarbon utilizers and amino acid production by their auxotrophs

AB cf. CA 59: 14313h. Nine microorganisms, which showed good growth on long-chain aliphatic hydrocarbons, were isolated by an enrichment culture method, followed by a single colony isolation technique. They included 5 strains of Alcaligenes marshallii, 2 strains of **Corynebacterium** hydrocarboclastus, and 2 strains of yeast. Various auxotrophic mutants were derived from these microorganisms. The mutants accumulated the following **amino acids** from aliphatic hydrocarbons; L-ornithine, L-valine, L-glutamic acid, L-leucine, L-tyrosine, L-alanine, L-proline, L-aspartic acid, and L-**lysine**.

ST BACTERIA AMINO ACID PRODN; AMINO ACID PRODN BACTERIA; HYDROCARBONS **AMINO ACIDS**; ALIPHATICS BACTERIA METAB

IT **Corynebacterium**
(hydrocarboclastus, amino acid fermentation of hydrocarbons by)

IT **Amino acids**, preparation

RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(manuf. of, by fermentation of hydrocarbons)

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(FILE 'HOME' ENTERED AT 18:56:31 ON 19 OCT 2001)

FILE 'BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH' ENTERED AT 18:57:06 ON 19 OCT 2001

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L1          2893 S MICROBIAL (W) PRODUCTION
L2           190 S L1 AND (AMINO (W) ACIDS)
L3            28 S L2 AND CORYNEBACTERIUM
L4            13 L3 AND LYSINE
L5             0 L3 AND ((EXPORT) (W) (GENE OR CARRIER))
L6             0 S L3 AND EXPORT (W) GENE
L7           166 S EXPORT (W) GENE
L8             0 S L3 AND L7
L9             0 S L3 (P) L7
L10            0 S L2 AND L7
L11            0 S L2 AND EXPORT (W) GENE
L12           61 S L7 AND MICROB?
L13            1 S L12 AND CORYNEBACTERIUM
L14           26 DUP REM L3 (2 DUPLICATES REMOVED)
L15           13 DUP REM L4 (0 DUPLICATES REMOVED)
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